

FIG. 1

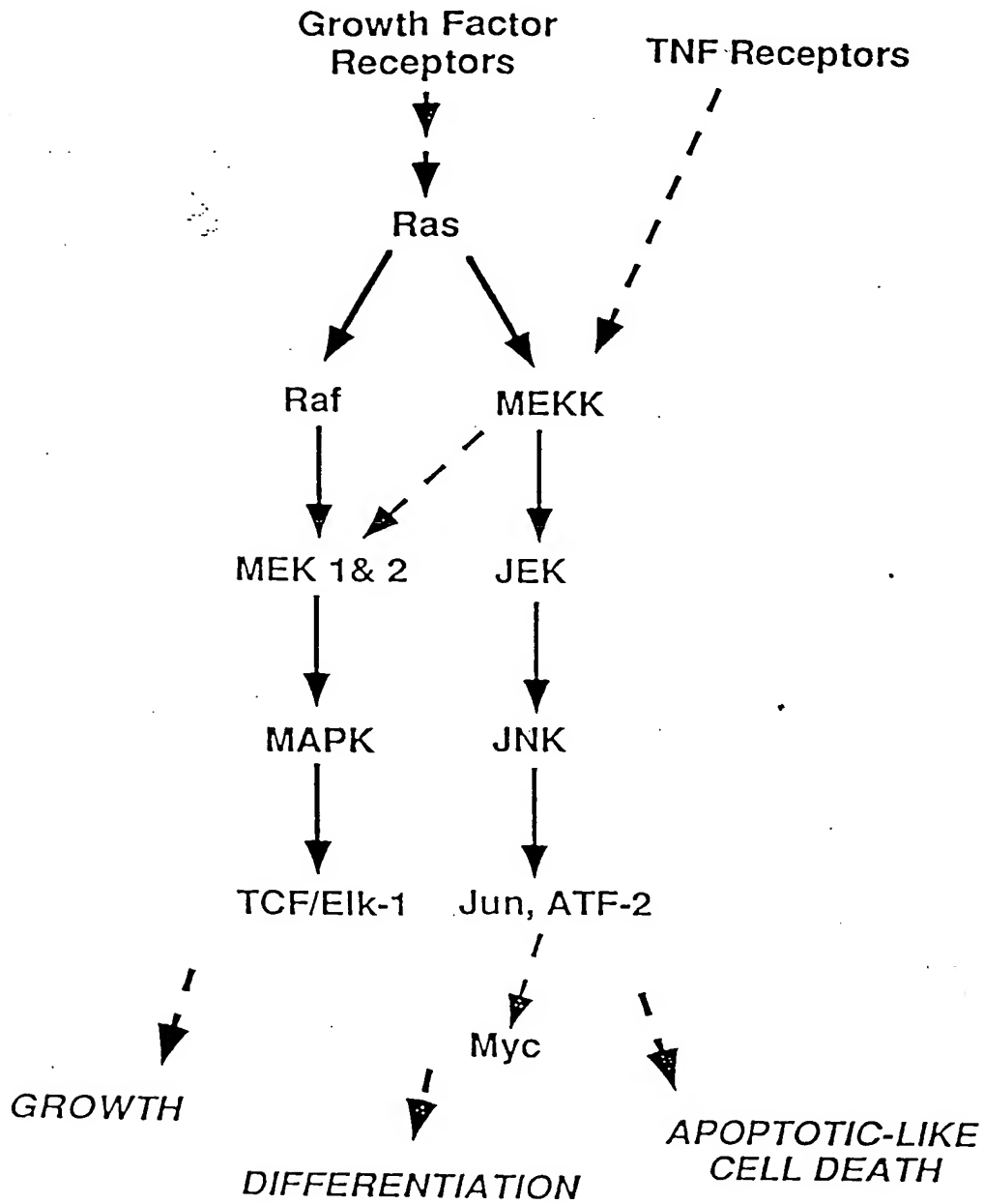


FIG. 2

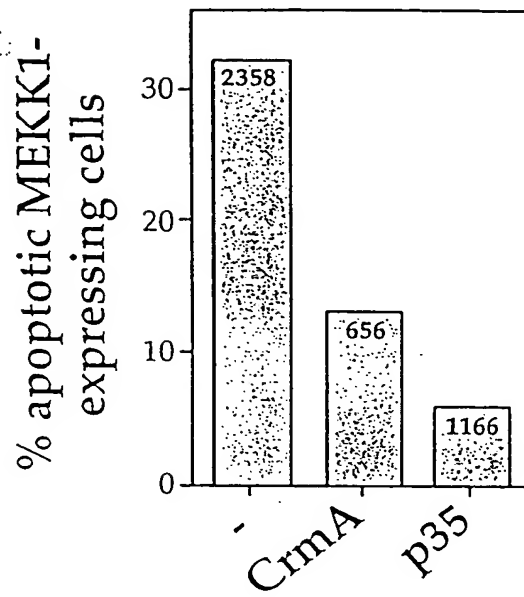


FIGURE 3

## Western Blot

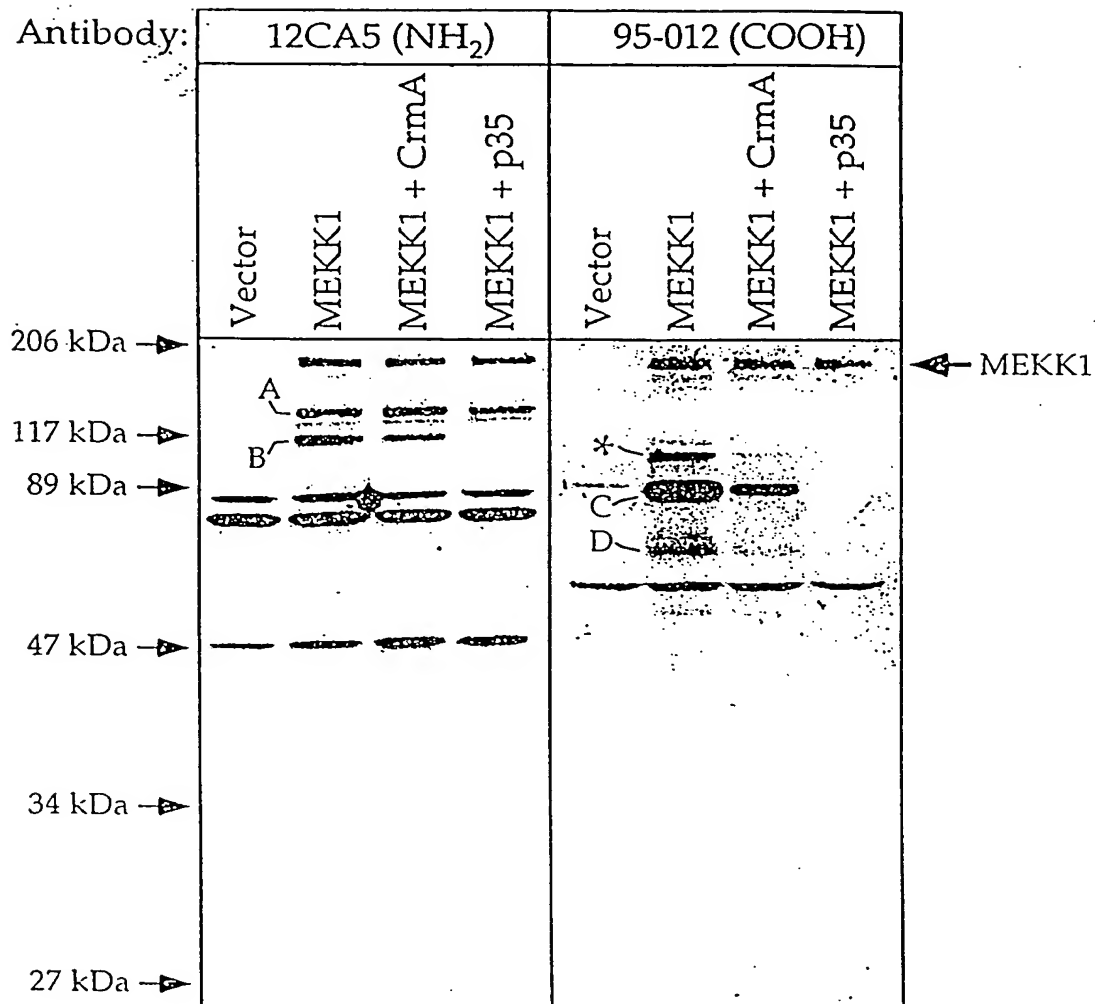


FIGURE 4

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

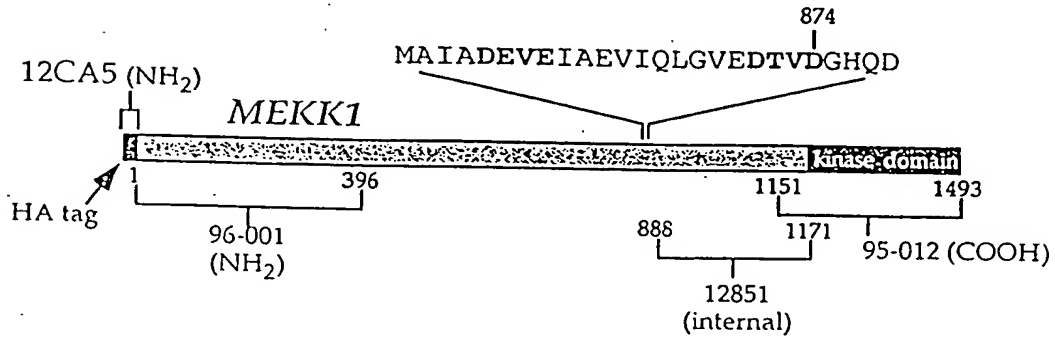


FIGURE 5

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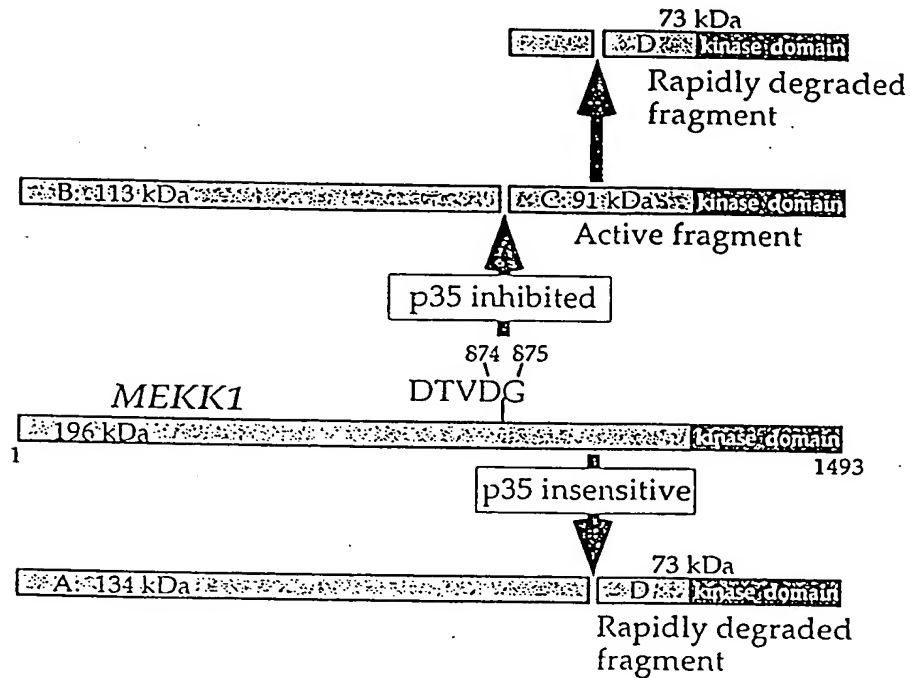


FIGURE 6

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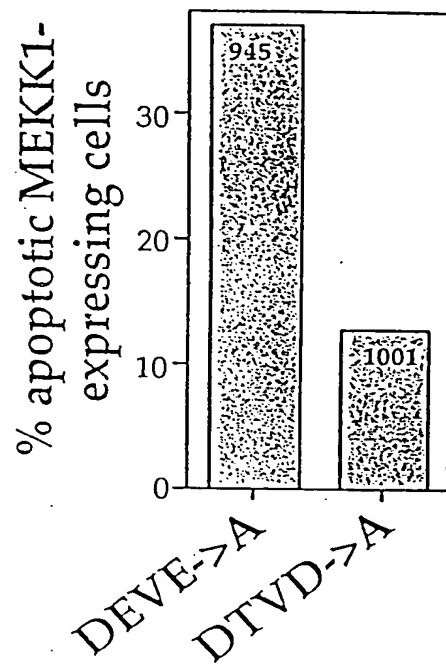


FIGURE 7

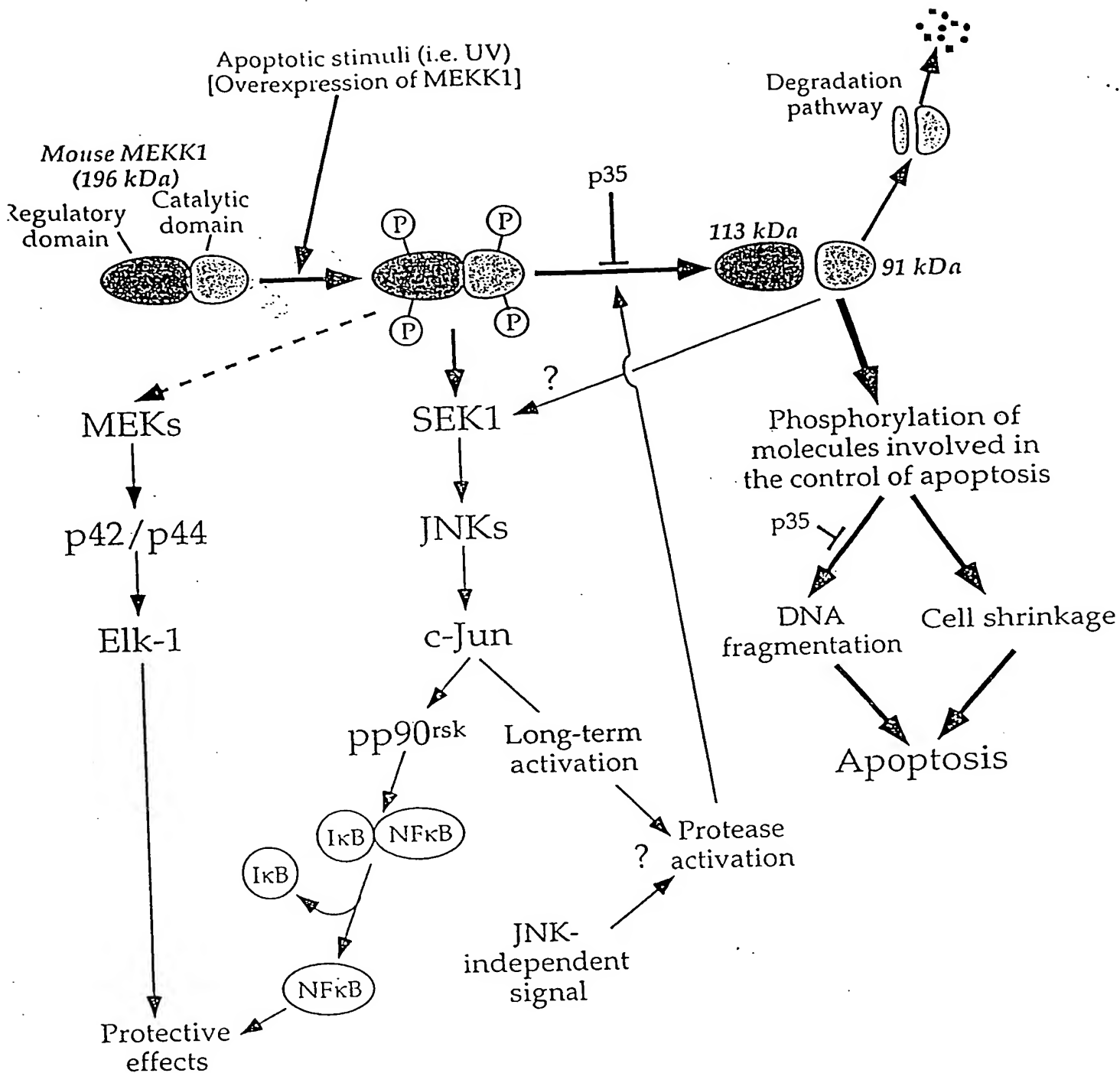


FIGURE 8



# Mouse MEKK 1

MAAAAGDRASSSGFPGAAAASPEAGGGGGGGALQSGCAPAAGAAGLLREPGSAGRE 57  
 RADWRRRLQRLKVRVSELDQLPEQPLFLAAASPPCPSTSPSPPEPADAAGASRFQPAA 114  
 GPPPPGAASRCGSHSAELAAARDSGARSPAGAEPSSAAAPSGREMNKETLKGLHKM. 171  
 EDRPEERMIREKLKATCMPAWKHEWLERRNRRGPVVVKPIPIKGDGSEVNNLAAEPQ 228  
 GEGQAGSAAAPAPKGRSPSPGSSPSGRSVKPESPGVRRKRVSFVPFQSGRITPPRRA 285  
 PSPDGFSPYSPEETSRRVNKVMRARLYLLQQIGPNSFLIGGDSPDNKYRVFIGPQNC 342  
 SCGRGAFCIHLLFVMLRVFQLEPSDPMWLKNTLKNFEVESLFQKYHSRRSSRIKAPS 399  
 RNTIQKFVSRMSNSHTLSSSSTSTSSSENSIKDEEEQMCPICLLGMDEESLTVCED 456  
 GCRNKLHHHCMSIWAECCRNRREPLICPLCRSKWRSHDFYSHELSSPVESPASLRAV 513  
 QQPSSPQQPVAGSQRRNQESSFNLTHFGTQQIPSAYKDLAEPWIQVFGMELVGCLFS 570  
 RNWNVREMLRRLSHDVS GALLLANGESTGNSGGGSGGSLSAGAASGSSQPSISGDV 627  
 VEACCSVLISIVCADPVYKVYVAALKTLRLMLVYTPCHSLAERIKLQRLLRPVVDLIL 684  
 VKCADANSRTSQLSISTVLELCKGQAGELAVGREILKAGSIGVGGVDYVLSLILGNQ. 741  
 AESNNWQELLGRLCLIDRLLEFPAEFYPHIVSTDVSQAEPVEIRYKLLSLTLFAL 798  
 QSIDNSHSMVGKLSRRIYLSSARMVTAVPAVFSKLVTMLNASGSTHFTMRRLMAI 855  
 ADEVEIAEVIQLGVEDTVDGHQDSLQAVAPTSCLENSLSLEHTVHREKTGKGLSATRL 912  
 SASSEDISDRLAGVSVGLPSSTTTEQPKPAVQTKGRPHSQCLNSSPLSHAQLMFPAP 969  
 SAPCSSAPSVDPISKHRPQAFVPCKIPSPASPQTQRKFSLQFQRNCSEHRSDQLSPV 1026  
 FTQSRPPSSNIHRPKPSRFVPGSTSKLGDATKSSMTLDLGSASRCDDSFGGGGNSG 1083  
 NAVIPSDETVFTFVEDKCRLDVNTELNSSIEDLLEASMPSSDTTVTFKSEVAVLSPE 1140  
 KAENDDTYKDDVNHNQCKEKEAEEEEALAIAMAMSASQDALPIVPQLQVENGEDI 1197  
 IIIQQDTPETLPGHTKAKQPYREDAEWLKGQQIGLGAFSSCYQAQDVGTGTLMAVKQ 1254  
 VTYVRNTSSEQEEVVEALREEIRMMGHLNHPNIIRMLGATCEKSNNYLFIEWMAGGS 1311  
 VAHLLSKYGAFKESVVINYTEQLLRGLSYLHENQIIHRDVKGANLLIDSTGQRLRIA 1368  
 DFGAAARLASKGTGAGEFQGQLLGTIAFMAPEVLRGQQYGRSCDVWSVGCAIIMAC 1425  
 AKPPFNAEKHSNHLALIFKIASATTAPSIPLSHLSPGLRDVAVRCLELQPDPRPPSRE 1482  
 LLKHPVFRTTW 1493

FIGURE 9

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# MEKK 1

rat	MAAAAGDRASSSGFPGAAAASPEA---GGGGGALQGS GAPAAG-AGLLRETGSAGRE
mouse	MAAAAGDRASSSGFPGAAAASPEAGGGGGGGGALQGS GAPAAGAAGLLREPGSAGRE
rat	RADWRRQQLRKVRVSVELDQLPEQPLFL-TASPPCPSTSPSPPEPADAAGASGFQPA
mouse	RADWRRQQLRKVRVSVELDQLPEQPLFLAAASPPCPSTSPSPPEPADAAGASRFQPA
rat	GPPPPGAASRCGSHSAELAAARDSGARSPAGAEPPSAAAPSGREMNKETLKGLHKM
mouse	GPPPPGAASRCGSHSAELAAARDSGARSPAGAEPPSAAAPSGREMNKETLKGLHKM
rat	DDRPEERMIREKLKATCMPAWKHEWLERRNRRGPFVVVKPIPIKGDGSEMSNLAAELQ
mouse	EDRPEERMIREKLKATCMPAWKHEWLERRNRRGPFVVVKPIPIKGDGSEVNNLAAEPQ
rat	GEGQAGSAAPAPKGRRSPPSGSSPSGRSGKPESPGVRRKRVSPVFPQSGRITPPRA
mouse	GEGQAGSAAPAPKGRRSPPSGSSPSGRSVKPESPGVRRKRVSPVFPQSGRITPPRA
rat	PSPDGFSPYSPEETSRRVNKVMRRLYLLOQIGPNSFLIGGDS PDNKYRVFIGPQNC
mouse	PSPDGFSPYSPEETSRRVNKVMRRLYLLOQIGPNSFLIGGDS PDNKYRVFIGPQNC
rat	SCGRGTFCIHLLFVMLRVFQLEPSDFMLWRKTLKNFEVESLFQKYHSRRSSRIKAPS
mouse	SCGRGAFCIHLLFVMLRVFQLEPSDFMLWRKTLKNFEVESLFQKYHSRRSSRIKAPS
rat	RNTIQKFVSRMSNCHTLSSSSTSTSSSENSIKDEEEQMC PICLLGMLDEESLTVCED
mouse	RNTIQKFVSRMSNSHTLSSSSTSTSSSENSIKDEEEQMC PICLLGMLDEESLTVCED
rat	GCRNKLHHHCMSIWAEECRRNREPLICPLCRSKWRSHDFYSHELSSPVDSPSLRGV
mouse	GCRNKLHHHCMSIWAEECRRNREPLICPLCRSKWRSHDFYSHELSSPVESPASLRAV
human	NKLHHHCMSIWAEECRRN PLICPLCRS WRSHDFYSHELSSPVDSPSSL
rat	QQPSSPQQPVAGSQRRNQESNFNLTHTYGTQQIPPAYKD LAEPW IQAFGMELVGCLFS
mouse	QQPSSPQQPVAGSQRRNQESSFNLTHTYGTQQIPSA YKD LAEPW IQVFGMELVGCLFS
human	Q V HPLAGS RRNQESNFNLTHTYGTQQIPPAYKD LAEPW IQVFGMELVGCLFS
rat	RNWNVREMA LRRLSHDVSGALLLANGE STGTSGGGSGGSL SAGAASGSSQPSISGDV
mouse	RNWNVREMA LRRLSHDVSGALLLANGE STGNSSGGSGGSL SAGAASGSSQPSISGDV
human	RNWNVREMA LRRLSHDVSGALLLANGE STGNSSGGSGGSSPSGGATSG SQT S SGDV
rat	VEAFCSVL SIVCADPVYKVYVAALKTLRAMLVYTPCHSLAERIKLQRLLRPVVDTIL
mouse	VEACCSVL SIVCADPVYKVYVAALKTLRAMLVYTPCHSLAERIKLQRLLRPVVDTIL
human	VEACC
rat	VKCADANSRTS QLSISTVLELCKGQAGELAVGREILKAGSIGVGGVDYVLS CILGNQ
mouse	VKCADANSRTS QLSISTVLELCKGQAGELAVGREILKAGSIGVGGVDYVLS CILGNQ
human	
rat	AESNNWQELLGRLCLIDRLLEISAEFYPHIVSTDV SQAEPVEIRYKLLSLLAFAL
mouse	AESNNWQELLGRLCLIDRLLEFPAEFYPHIVSTDV SQAEPVEIRYKLLSLLTFAL
human	PAEFYPHIVSTDV SQAEPVEIRYKLLSLL FA
rat	QSIDNSHSMVGKLSRRIYLSSARMVTTVPPIFSKLV TMLSASGSSH FARMRRRLMAI
mouse	QSIDNSHSMVGKLSRRIYLSSARMVTAVPAVFSKLV TMLNAGSTHFTMRRLM I
human	K ID SHSMVG SR DIS L CYDDGRSAVCPSW PCLMLLGSTHFTMRRLMAI

FIGURE 10A

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APOPTOSIS

A

rat	ADEVEIAEVIQLGSED <del>TL</del> DGQQDSSQALAPPRYPSSSLEHTAHVEKTGKGLKATRL
mouse	ADEVEIAEVIQLGVED <del>TV</del> DGHQDSLQAVAPTSCLNSSLEHTVHREKTGKGLSATRL
human	ADEVEIAEVIQLGEVD <del>TV</del> DGHQDSLRLALAPASCRENSSLEHTVHREKTGKGLSATRL

L

rat	SASSEDISDRLAGVSVGLPSSATTEQPKPTVQTKGRPHSQCLNSSPLSPQLMFPAP
mouse	SASSEDISDRLAGVSVGLPSS <del>TT</del> TEQPKPAVQTKGRPHSQCLNSSPLSHAQLMFPAP
human	STSSEEISDRLAGVSVGFPS <del>TT</del> TEQPKPAVQTKGRPHSQCLNSSPLSHAQLMFPAP

rat	SAPCSSAPSV <del>PAGSV</del> TDASKHRPRA <del>FV</del> PC <del>KIP</del> SASPQTQRKFSLQFQRTCS <del>EN</del> RDSE
mouse	SAPCSSAPSV <del>P</del> -----DISKHRPQA <del>FV</del> PC <del>KIP</del> SASPQTQRKFSLQFQ <del>RNC</del> SEHRDSD
human	SAPCSSAP VP DISKHRPQA <del>FV</del> PC <del>KIL</del> PHLPQTQRKFSLQFQ <del>RN</del> EHRDQT

rat	KLSPVFTQSRPPFPSSNIHRAKASRPVPGSTSKLGDASKNSMTLDLNSASQCDDSF <del>GS</del>
mouse	QLSPVFTQSRPPFPSSNIHRPKPSRPVPGSTSKLGDATKSSMTLDLGASRCDDSF <del>GG</del>
human	QLSPVFTQSQDPTSSNIHRPKPDRPAPGSTSKLGDATKSSMTLDLGQCSRCDDSF <del>GG</del>

rat	GSNSGSAVIPSEETAFTPAEDKCRLDVNPELNSSIEDLLEASMPSSD <del>TT</del> VTFKSEVA
mouse	GGNSGNAVIPSDET <del>VFT</del> PVEDKCRLDVNTELNSSIEDLLEASMPSSD <del>TT</del> VTFKSEVA
human	GGNSGNAVIPSDET <del>VFT</del> PVEDKCRLDVNTELNSSIEDLLEASMPSSD <del>TT</del> VTFKSEVA

rat	VLSPEKAESDDTYKDDVNH <del>NQ</del> CKE <del>KME</del> EEEEALAIAMAMSASQDALPIV <del>PQ</del> LQVE
mouse	VLSPEKAENDDTYKDDVNH <del>NQ</del> CKE <del>KME</del> EEEEALAIAMAMSASQDALPIV <del>PQ</del> LQVE
human	VLSPEKAENDDTYK VY

rat	NGEDIIIIQQDTPETLPGHTKANEPYREDTEWLKGQQIGLGAFSSCYQAQDVGTGTL
mouse	NGEDIIIIQQDTPETLPGHTKAKQPYREDAEWLKGQQIGLGAFSSCYQAQDVGTGTL
human	VIQQDTPETLPGHTKAKQPYREDAEWL G QIGLGHF

rat	MAVKQVTYVRNTSSEQE <del>EV</del> VEALREEIRMMSHLNHPNIIRMLGATCEKSNYNLFIEW
mouse	MAVKQVTYVRNTSSEQE <del>EV</del> VEALREEIRMMGHLNHPNIIRMLGATCEKSNYNLFIEW
human	EEIR MSHLNHP IIRMLG TGKKS <del>NY</del> LFIEW

rat	MAGASVAHLLSKYGAFKESVVINYTEQLLRGLSYLHENQIIHRDVKGANLLIDSTGQ
mouse	MAGGSVAHLLSKYGAFKESVVINYTEQLLRGLSYLHENQIIHRDVKGANLLIDSTGQ
human	MAGGSVAHLLSKYGAF ES <del>V</del> VI YTEQ LRGLSYLHENQIIH DVKGANLLID TG

rat	RLRIADFGAAARLASKGTGAGEFQGQLLGTIAFMAPEVLRGQQYGRSCDVWSVGCAI
mouse	RLRIADFGAAARLASKGTGAGEFQGQLLGTIAFMAPEVLRGQQYGRSCDVWSVGCAI
human	RLRIADFGAAA LASKG GAGEFQGQL GTIAFMAPEV RG QYGRSCDVWSVGCAI

rat	IEMACAKPPWNAEKHSNHLALIFKIASATTAPSIPSHLSPGLRDVALRCLELQPQDR
mouse	IEMACAKPPWNAEKHSNHLALIFKIASATTAPSIPSHLSPGLRDVA <del>VR</del> RCLELQPQDR
human	IEMACAKPPWNAEKHSNHLALIKKIASATTAPSIPSHLSPGLRNVALRCLELQPQDR

rat	PPSRELLKHPVFRTTW
mouse	PPSRELLKHPVFRTTW
human	PPSRELLKHPVFRTT

FIGURE 10B

# Mouse MEKK1 cDNA

```

      10      20      30      40
      *      *      *      *
GCC CGC GAG AGA AAA TGG CGG CGG CGG GCG ATC GCG CCT CGT
CGG GCG CTC TCT TTT ACC GCC GCC GCC GCC CGC TAG CGC GGA GCA

      50      60      70      80      90
      *      *      *      *      *
CGT CGG GAT TCC CGG GCG CCG CGG CGG CGA GTC CCG AGG CGG GCG
GCA GCC CTA AGG GCC CGC GGC GCC GCT CAG GGC TCC GCC CGC

      100     110     120     130
      *      *      *      *      *
GCG GCG GCG GAG GAG GAG GAG CTC TCC AGG GAA GCG GCG CGC CCG
CGC CGC CGC CTC CTC CTC CTC GAG AGG TCC CTT CGC CGC GCG GGC

      140     150     160     170     180
      *      *      *      *      *
CAG CGG GCG CGG CGG GGC TGC TGC GGC AGC CTG GCA GCG CGG GCC
GTC GCC CGC GCC GCC CCG ACG ACG CCC TCG GAC CGT CGC GCC CGG

      190     200     210     220
      *      *      *      *      *
GCG AGC GCG CGG ACT GGC GGC GGC GGC AGC TGC GCA AAG TGC GGA
CGC TCG CGC GCC TGA CCG CCG CCG CCG TCG ACG CGT TTC ACG CCT

      230     240     250     260     270
      *      *      *      *      *
GTG TGG AGC TGG ACC AGC TGC CGG AGC AGC CGC TCT TCC TCG CCG
CAC ACC TCG ACC TGG TCG ACG GCC TCG TCG GCG AGA AGG AGC GGC

      280     290     300     310
      *      *      *      *      *
CCG CCT CGC CGC CCT GCC CAT CTA CTT CCC CGT CGC CGG AGC CCG
GGC GGA GCG GCG GGA CGG GTA GAT GAA GGG GCA GCG GCC TCG GGC

      320     330     340     350     360
      *      *      *      *      *
CGG ACG CGG CTG CAG GAG CGA GTC GCT TCC AGC CCG CGG CGG GAC
GCC TGC GCC GAC GTC CTC GCT CAG CGA AGG TCG GGC GCC GCC CTG

      370     380     390     400
      *      *      *      *      *
CGC CAC CCC CGG GAG CGG CGA GTC GCT GCG GCT CCC ACT CTG CCG
GCG GTG GGG GCC CTC GCC GCT CAG CGA CGC CGA GGG TGA GAC GGC

      410     420     430     440     450
      *      *      *      *      *
AGC TGG CGG CCG CGC GGG ACA GCG GCG CCC GGA GCC CCG CGG GGG
TCG ACC GCC GGC GCG CCC TGT CGC CGC GGG CCT CGG GGC GCC CCC

      460     470     480     490
      *      *      *      *      *
CCG AGC CGC CCT CTG CAG CGG CCC CCT CCG GTC GAG AGA TGG AGA
GGC TCG GCG GGA GAC GTC GCC GGG GGA GGC CAG CTC TCT ACC TCT

      500     510     520     530     540
      *      *      *      *      *

```

Fig. 11A

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

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ATA AAG AAA CCC TCA AAG GAC TGC ACA AGA TGG AGG ATC GCC CGG
TAT TTC TTT GGG AGT TTC CTG ACG TGT TCT ACC TCC TAG CGG GCC

      550      560      570      580
      *      *      *      *
AGG AGA GAA TGA TCC GGG AGA AGC TCA AGG CGA CCT GTA TGC CGG
TCC TCT CTT ACT AGG CCC TCT TCG AGT TCC GCT GGA CAT ACG GCC

      590      600      610      620      630
      *      *      *      *      *
CCT GGA AGC ACG AGT GGT TGG AGA GGA GGA ACA GGA GAG GCC CTG
GGA CCT TCG TGC TCA CCA ACC TCT CCT CCT TGT CCT CTC CGG GAC

      640      650      660      670
      *      *      *      *
TGG TGG TGA AGC CAA TCC CTA TTA AAG GAG ATG GAT CTG AAG TGA
ACC ACC ACT TCG GTT AGG GAT AAT TTC CTC TAC CTA GAC TTC ACT

      680      690      700      710      720
      *      *      *      *      *
ATA ACT TGG CAG CTG AGC CCC AGG GAG AGG GCC AGG CAG GTT CCG
TAT TGA ACC GTC GAC TCG GGG TCC CTC TCC CGG TCC GTC CAA GGC

      730      740      750      760
      *      *      *      *
CTG CAC CAG CCC CCA AGG GCC GAC GAA GCC CAT CTC CTG GCA GCT
GAC GTG GTC GGG GGT TCC CGG CTG CTT CGG GTA GAG GAC CGT CGA

      770      780      790      800      810
      *      *      *      *      *
CTC CGT CAG GGC GCT CGG TGA AGC CGG AAT CCC CAG GAG TAA GAC
GAG GCA GTC CCG CGA GCC ACT TCG GCC TTA GGG GTC CTC ATT CTG

      820      830      840      850
      *      *      *      *
GGA AAC GAG TGT CCC CGG TGC CTT TCC AGA GTG GCA GAA TCA CAC
CCT TTG CTC ACA GGG GCC ACG GAA AGG TCT CAC CGT CTT AGT GTG

      860      870      880      890      900
      *      *      *      *      *
CAC CCC GAA GAG CCC CAT CAC CGG ATG GCT TCT CCC CGT ACA GCC
GTG GGG CTT CTC GGG GTA GTG GCC TAC CGA AGA GGG GCA TGT CGG

      910      920      930      940
      *      *      *      *
CAG AGG AGA CGA GCC GCC GCG TGA ACA AAG TGA TGA GAG CCA GGC
GTC TCC TCT GCT CGG CGG CGC ACT TGT TTC ACT ACT CTC GGT CCG

      950      960      970      980      990
      *      *      *      *      *
TGT ACC TGC TGC AGC AGA TAG GAC CCA ACT CTT TCC TGA TTG GAG
ACA TGG ACG ACG TCG TCT ATC CCG GGT TGA GAA AGG ACT AAC CTC

      1000      1010      1020      1030
      *      *      *      *
GAG ACA GTC CAG ACA ATA AAT ACC GGG TGT TTA TTG GGC CAC AGA
CTC TGT CAG GTC TGT TAT TTA TGG CCC ACA AAT AAC CCG GTG TCT

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Figure 11B

App No.: Not Yet Assigned

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APOPTOSIS

# Mouse MEKK1 cDNA

```

1040      1050      1060      1070      1080
*          *          *          *          *
ACT GCA GCT GTG GGC GTG GAG CAT TCT GTA TTC ACC TCT TGT TTG
TGA CGT CGA CAC CCG CAC CTC GTA AGA CAT AAG TGG AGA ACA AAC

      1090      1100      1110      1120
*          *          *          *          *
TCA TGC TCC GGG TGT TTC AGC TAG AAC CCT CTG ACC CCA TGT TAT
AGT ACG AGG CCC ACA AAG TCG ATC TTG GGA GAC TGG GGT ACA ATA

1130      1140      1150      1160      1170
*          *          *          *          *
GGA GAA AAA CTT TAA AAA ATT TCG AGG TTG AGA GTT TGT TCC AGA
CCT CTT TTT GAA ATT TTT TAA AGC TCC AAC TCT CAA ACA AGG TCT

      1180      1190      1200      1210
*          *          *          *          *
AAT ACC ACA GTA GGC GTA GCT CGA GAA TCA AAG CTC CAT CCC GGA
TTA TGG TGT CAT CCG CAT CGA GCT CTT AGT TTC GAG GTA GGG CCT

1220      1230      1240      1250      1260
*          *          *          *          *
ACA CCA TCC AGA AGT TTG TGT CAC GCA TGT CAA ATT CTC ACA CAC
TGT GGT AGG TCT TCA AAC ACA GTG CGT ACA GTT TAA GAG TGT GTG

      1270      1280      1290      1300
*          *          *          *          *
TGT CAT CGT CTA GCA CAT CCA CAT CTA GTT CAG AAA ACA GCA TCA
ACA GTA GCA GAT CGT GTA GGT GTA GAT CAA GTC TTT TGT CGT AGT

1310      1320      1330      1340      1350
*          *          *          *          *
AGG ATG AAG AGG AGC AGA TGT GTC CCA TCT GCT TGC TGG GCA TGC
TCC TAC TTC TCC TCG TCT ACA CAG GGT AGA CGA ACG ACC CGT ACG

      1360      1370      1380      1390
*          *          *          *          *
TGG ATG AGG AGA GCC TGA CTG TGT GTG AAG ATG GCT GCA GGA ACA
ACC TAC TCC TCT CGG ACT GAC ACA CAC TTC TAC CGA CGT CCT TGT

1400      1410      1420      1430      1440
*          *          *          *          *
AGC TGC ACC ACC ATT GCA TGT CCA TCT GGG CGG AAG AGT GTA GAA
TCG ACG TGG TGG TAA CGT ACA GGT AGA CCC GCC TTC TCA CAT CTT

      1450      1460      1470      1480
*          *          *          *          *
GAA ATA GAG AGC CTT TAA TAT GTC CCC TTT GTA GAT CTA AGT GGA
CTT TAT CTC TCG GAA ATT ATA CAG GGG AAA CAT CTA GAT TCA CCT

1490      1500      1510      1520      1530
*          *          *          *          *
GAT CCC ATG ACT TCT ACA GCC ATG AGT TAT CAA GCC CCG TGG AGT
CTA GGG TAC TGA AGA TGT CCG TAC TCA ATA GTT CCG GGC ACC TCA

1540      1550      1560      1570

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Figure 11-C

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Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

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* * * * *
CCC CCG CCT CCC TGC GAG CTG TCC AGC AGC CAT CCT CCC CGC AGC
GGG GGC GGA GGG ACG CTC GAC AGG TCG TCG GTA GGA GGG GCG TCG

1580      1590      1600      1610      1620
* * * * *
AGC CCG TGG CCG GAT CAC AGC GGA GGA ATC AGC AGA GCA GTT TTA
TCG GGC ACC GGC CTA GTG TCG CCT CCT TAG TCC TCT CGT CAA AAT

      1630      1640      1650      1660
* * * * *
ACC TTA CTC ATT TTG GAA CCC AGC AGA TTC CTT CCG CTT ACA AAG
TGG AAT GAG TAA AAC CTT GGG TCG TCT AAG GAA GGC GAA TGT TTC

1670      1680      1690      1700      1710
* * * * *
ATT TGG CCG AGC CAT GGA TTC AGG TGT TTG GAA TGG AAC TCG TTG
TAA ACC GGC TCG GTA CCT AAG TCC ACA AAC CTT ACC TTG AGC AAC

      1720      1730      1740      1750
* * * * *
GCT GCT TAT TCT CTA GAA ACT GGA ACG TAA GGG AAA TGG CCC TTA
CGA CGA ATA AGA GAT CTT TGA CCT TGC ATT CCC TTT ACC GGG AAT

1760      1770      1780      1790      1800
* * * * *
GGC GTC TTT CCC ACG ACG TTA GTG GGG CCC TGT TGT TGG CAA ACG
CCG CAG AAA GGG TGC TGC AAT CAC CCC GGG ACA ACA ACC GTT TGC

      1810      1820      1830      1840
* * * * *
GGG AGA GCA CTG GAA ACT CTG GAG GCG GCA GTG GGG GCA GCT TAA
CCC TCT CGT GAC CTT TGA GAC CTC CGC CGT CAC CCC CGT CGA ATT

1850      1860      1870      1880      1890
* * * * *
GCG CGG GAG CGG CCA GCG GGT CCT CCC AGC CCA GCA TCT CAG GGG
CGC GCC CTC GCC GGT CGC CCA GGA GGG TCG GGT CGT AGA GTC CCC

      1900      1910      1920      1930
* * * * *
ATG TGG TGG AGG CGT GCT GCA GTG TCC TGT CTA TAG TCT GCG CTG
TAC ACC ACC TCC GCA CGA CGT CAC AGG ACA GAT ATC AGA CGC GAC

1940      1950      1960      1970      1980
* * * * *
ACC CTG TCT ACA AAG TGT ACG TTG CTG CTT TAA AAA CAT TGA GAG
TGG GAC AGA TGT TTC ACA TGC AAC GAC GAA ATT TTT GTA ACT CTC

      1990      2000      2010      2020
* * * * *
CCA TGC TGG TAT ACA CTC CTT GCC ACA GTC TGG CAG AAA GAA TCA
GGT ACG ACC ATA TGT GAG GAA CGG TGT CAG ACC GTC TTT CTT AGT

2030      2040      2050      2060      2070
* * * * *
AAC TTC AGA GAC TCC TCC GGC CAG TTG TAG ACA CTA TCC TTG TCA

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Figure 11D

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

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TTG AAG TCT CTG AGG AGG CCG GTC AAC ATC TGT GAT AGO AAC AGT
      2080      2090      2100      2110
      *      *      *      *      *      *
AGT GTG CAG ATG CCA ACA GCC GCA CGA GTC AGC TGT CCA TAT CTA
TCA CAC GTC TAC GGT TGT CGG CGT GCT CAG TCG ACA GGT ATA GAT

      2120      2130      2140      2150      2160
      *      *      *      *      *      *
CAG TGC TGG AAC TCT GCA AGG GCC AAG CAG GAG AGC TGG CGG TTG
GTC ACG ACC TTG AGA CGT TCC CGG TTC GTC CTC TCG ACC GCC AAC

      2170      2180      2190      2200
      *      *      *      *      *      *
GGA GAG AAA TAC TTA AAG CTG GGT CCA TCG GGG TTG GTG GTG TCG
CCT CTC TTT ATG AAT TTC GAC CCA GGT AGC CCC AAC CAC CAC AGC

      2210      2220      2230      2240      2250
      *      *      *      *      *      *
ATT ACG TCT TAA GTT GTA TCC TTG GAA ACC AAG CTG AAT CAA ACA
TAA TGC AGA ATT CAA CAT AGG AAC CTT TGG TTC GAC TTA GTT TGT

      2260      2270      2280      2290
      *      *      *      *      *      *
ACT GGC AAG AAC TGC TGG GTC GCC TCT GTC TTA TAG ACA GGT TGC
TGA CCG TTC TTG ACG ACC CAG CGG AGA CAG AAT ATC TGT CCA ACG

      2300      2310      2320      2330      2340
      *      *      *      *      *      *
TGT TGG AAT TTC CTG CTG AAT TCT ATC CTC ATA TTG TCA GTA CTG
ACA ACC TTA AAG GAC GAC TTA AGA TAG GAG TAT AAC AGT CAT GAC

      2350      2360      2370      2380
      *      *      *      *      *      *
ATG TCT CAC AAG CTG AGC CTG TTG AAA TCA GGT ACA AGA AGC TGC
TAC AGA GTG TTC GAC TCG GAC AAC TTT AGT CCA TGT TCT TCG ACG

      2390      2400      2410      2420      2430
      *      *      *      *      *      *
TCT CCC TCT TAA CCT TTG CCT TGC AAT CCA TTG ACA ATT CCC ACT
AGA GGG AGA ATT GGA AAC GGA ACG TTA GGT AAC TGT TAA GGG TGA

      2440      2450      2460      2470
      *      *      *      *      *      *
CGA TGG TTG GCA AGC TCT CTC GGA GGA TAT ATC TGA GCT CTG CCA
GCT ACC AAC CGT TCG AGA GAG CCT CCT ATA TAG ACT CGA GAC GGT

      2480      2490      2500      2510      2520
      *      *      *      *      *      *
GGA TGG TGA CCG CAG TGC CCG CTG TGT TTT CCA AGC TGG TAA CCA
CCT ACC ACT GGC GTC ACG GGC GAC ACA AAA GGT TCG ACC ATT GGT

      2530      2540      2550      2560
      *      *      *      *      *      *
TGC TTA ATG CTT CTG GCT CCA CCC ACT TCA CCA GGA TGC GCC GGC
ACG AAT TAC GAA GAC CGA GGT GGG TGA AGT GGT CCT ACG CGG CCG

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Figure 11E

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS



# Mouse MEKK1 cDNA

```

2570      2580      2590      2600      2610
*          *          *          *          *
GTC TGA TGG CTA TCG CGG ATG AGG TAG AAA TTG CCG AGG TCA TCC
CAG ACT ACC GAT AGC GCC TAC TCC ATC TTT AAC GGC TCC AGT AGG

      2620      2630      2640      2650
*          *          *          *          *
AGC TGG GTG TGG AGG ACA CTG TGG ATG GGC ATC AGG ACA GCT TAC
TCG ACC CAC ACC TCC TGT GAC ACC TAC CCG TAG TCC TGT CGA ATG

2660      2670      2680      2690      2700
*          *          *          *          *
AGG CCG TGG CCC CCA CCA GCT GTC TAG AAA ACA GCT CCC TTG AGC
TCC GGC ACC GGG GGT GGT CGA CAG ATC TTT TGT CGA GGG AAC TCG

      2710      2720      2730      2740
*          *          *          *          *
ACA CAG TCC ATA GAG AGA AAA CTG GAA AAG GAC TAA GTG CTA CGA
TGT GTC AGG TAT CTC TCT TTT GAC CTT TTC CTG ATT CAC GAT GCT

2750      2760      2770      2780      2790
*          *          *          *          *
GAC TGA GTG CCA GCT CGG AGG ACA TTT CTG ACA GAC TGG CCG GCG
CTG ACT CAC GGT CGA GCC TCC TGT AAA GAC TGT CTG ACC GGC CGC

      2800      2810      2820      2830
*          *          *          *          *
TCT CTG TAG GAC TTC CCA GCT CAA CAA CAA CAG AAC AAC CAA AGC
AGA GAC ATC CTG AAG GGT CGA GTT GTT GTT GTC TTG TTG GTT TCG

2840      2850      2860      2870      2880
*          *          *          *          *
CAG CGG TTC AAA CAA AAG GCA GAC CCC ACA GTC AGT GTT TGA ACT
GTC GCC AAG TTT GTT TTC CGT CTG GGG TGT CAG TCA CAA ACT TGA

      2890      2900      2910      2920
*          *          *          *          *
CCT CCC CTT TGT CTC ATG CTC AAT TAA TGT TCC CAG CAC CAT CAG
GGA GGG GAA ACA GAG TAC GAG TTA ATT ACA AGG GTC GTG GTA GTC

2930      2940      2950      2960      2970
*          *          *          *          *
CCC CTT GTT CCT CTG CCC CGT CTG TCC CAG ATA TTT CTA AGC ACA
GGG GAA CAA GGA GAC GGG GCA GAC AGG GTC TAT AAA GAT TCG TGT

      2980      2990      3000      3010
*          *          *          *          *
GAC CCC AGG CAT TTG TTC CCT GCA AAA TAC CTT CCG CAT CTC CTC
CTG GGG TCC GTA AAC AAG GGA CGT TTT ATG GAA GGC GTA GAG GAG

3020      3030      3040      3050      3060
*          *          *          *          *
AGA CAC AGC GCA AGT TCT CTC TAC AAT TCC AGA GGA ACT GCT CTG
TCT GTG TCG COT TCA AGA AAG ATG TTA AGG TCT CCT TGA CGA GAC

      3070      3080      3090      3100
*          *          *          *          *

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Figure 11F

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

AAC ACC GAG ACT CAG ACC AGC TCT CCC CAG TCT TCA CTC AGT CAA  
TTG TGG CTC TGA GTC TGG TCG AGA GGG GTC AGA AGT GAG TCA GTT

3110 3120 3130 3140 3150  
\* \* \* \* \*  
GAC CCC CAC CCT CCA GTA ACA TAC ACA GGC CAA AGC CAT CCC GAC  
CTG GGG GTG GGA GGT CAT TGT ATG TGT CCG GTT TCG GTA GGG CTG

3160 3170 3180 3190  
\* \* \* \* \*  
CCG TTC CGG GCA GTA CAA GCA AAC TAG GGG ACG CCA CAA AAA GTA  
GGC AAG GCC CGT CAT GTT CGT TTG ATC CCC TGC GGT GTT TTT CAT

3200 3210 3220 3230 3240  
\* \* \* \* \*  
GCA TGA CAC TTG ATC TGG GCA GTG CTT CCA GGT GTG ACG ACA GCT  
CGT ACT GTG AAC TAG ACC CGT CAC GAA GGT CCA CAC TGC TGT CGA

3250 3260 3270 3280  
\* \* \* \* \*  
TTG GCG GCG GCG GCA ACA GTG GCA ACG CCG TCA TAC CCA GCG ACG  
AAC CGC CGC CGC CGT TGT CAC CGT TGC GGC AGT ATG GGT CGC TGC

3290 3300 3310 3320 3330  
\* \* \* \* \*  
AGA CAG TGT TCA CGC CGG TGG AGG ACA AGT GCA GGT TAG ATG TGA  
TCT GTC ACA AGT GCG GCC ACC TCC TGT TCA CGT CCA ATC TAC ACT

3340 3350 3360 3370  
\* \* \* \* \*  
ACA CCG AGC TCA ACT CCA GCA TCG AGG ACC TTC TTG AAG CAT CCA  
TGT GGC TCG AGT TGA GGT CGT AGC TCC TGG AAG AAC TTC GTA GGT

3380 3390 3400 3410 3420  
\* \* \* \* \*  
TGC CTT CAA GTG ACA CGA CAG TCA CTT TCA AGT CCG AAG TCG CCG  
ACG GAA GTT CAC TGT GCT GTC AGT GAA AGT TCA GGC TTC AGC GGC

3430 3440 3450 3460  
\* \* \* \* \*  
TCC TCT CTC CGG AAA AGG CCG AAA ATG ACG ACA CCT ACA AAG ACG  
AGG AGA GAG GCC TTT TCC GGC TTT TAC TGC TGT GGA TGT TTC TGC

3470 3480 3490 3500 3510  
\* \* \* \* \*  
ACG TCA ATC ATA ATC AAA AGT GCA AAG AAA AGA TGG AAG CTG AAG  
TGC AGT TAG TAT TAG TTT TCA CGT TTC TTT TCT ACC TTC GAC TTC

3520 3530 3540 3550  
\* \* \* \* \*  
AGG AGG AGG CTT TAG CGA TCG CCA TGG CGA TGT CAG CGT CTC AGG  
TCC TCC TCC GAA ATC GCT AGC GGT ACC GCT ACA GTC GAG TCC

3560 3570 3580 3590 3600  
\* \* \* \* \*  
ATG CCC TCC CCA TCG TCC CTC AGC TGC AGG TGG AAA ATG GAG AAG  
TAC GGG AGG GGT AGC AGG GAG TCG ACG TCC ACC TTT TAC CTC TTC

Fig 11 G

App No.: Not Yet Assigned  
Inventor: Gary L. Johnson  
Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

Docket No.: CPI-042CN2

# Mouse MEKK1 cDNA

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      3610      3620      3630      3640
      *      *      *      *
ATA TTA TCA TCA TTC AGC AGG ACA CAC CAG AAA CTC TTC CAG GAC
TAT AAT AGT AGT AAG TCG TCC TGT GTG GTC TTT GAG AAG GTC CTG

      3650      3660      3670      3680      3690
      *      *      *      *      *
ATA CCA AAG CGA AAC AGC CTT ACA GAG AAG ACG CTG AGT GGC TGA
TAT GGT TTC GCT TTG TCG GAA TGT CTC TTC TGC GAC TCA CCG ACT

      3700      3710      3720      3730
      *      *      *      *
AAG GCC AGC AGA TAG GCC TCG GAG CAT TTT CTT CCT GTT ACC AAG
TTC CGG TCG TCT ATC CGG AGC CTC GTA AAA GAA GGA CAA TGG TTC

      3740      3750      3760      3770      3780
      *      *      *      *      *
CAC AGG ATG TGG GGA CTG GGA CTT TAA TGG CTG TGA AAC AGG TGA
GTG TCC TAC ACC CCT GAC CCT GAA ATT ACC GAC ACT TTG TCC ACT

      3790      3800      3810      3820
      *      *      *      *
CGT ACG TCA GAA ACA CAT CCT CCG AGC AGG AGG AGG TGG TGG AAG
GCA TGC AGT CTT TGT GTA GGA GGC TCG TCC TCC TCC ACC ACC TTC

      3830      3840      3850      3860      3870
      *      *      *      *      *
CGT TGA GGG AAG AGA TCC GGA TGA TGG GTC ACC TCA ACC ATC CAA
GCA ACT CCC TTC TCT AGG CCT ACT ACC CAG TGG AGT TGG TAG GTT

      3880      3890      3900      3910
      *      *      *      *
ACA TCA TCC GGA TCC TGG GGG CCA CGT GCG AGA AGA GCA ACT ACA
TGT AGT AGG CCT ACG ACC CCC GGT GCA CGC TCT TCT CGT TGA TGT

      3920      3930      3940      3950      3960
      *      *      *      *      *
ACC TCT TCA TTG AGT GGA TGG CGG GAG GAT CTG TGG CTC ACC TCT
TGG AGA AGT AAC TCA CCT ACC GCC CTC CTA GAC ACC GAG TGG AGA

      3970      3980      3990      4000
      *      *      *      *
TGA GTA AAT ACG GAG CTT TCA AGG AGT CAG TCG TCA TTA ACT ACA
ACT CAT TTA TGC CTC GAA AGT TCC TCA GTC AGC AGT AAT TGA TGT

      4010      4020      4030      4040      4050
      *      *      *      *      *
CTG AGC AGT TAC TGC GTG GCC TTT CCT ATC TCC ACG AGA ACC AGA
GAC TCG TCA ATG ACG CAC CGG AAA GGA TAG AGG TGC TCT TGG TCT

      4060      4070      4080      4090
      *      *      *      *
TCA TTC ACA GAG ACG TCA AAG GTG CCA ACC TGC TCA TTG ACA GCA
AGT AAG TGT CTC TGC AGT TTC CAC GGT TGG ACG AGT AAC TGT CGT

      4100      4110      4120      4130      4140

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Figure 11 H

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 CDNA

```

*      *      *      *      *      *      *      *
CCG GTC AGA GGC TGA GAA TTG CAG ACT TTG GAG CTG CTG CCA GGT
GGC CAG TCT CCG ACT CTT AAC GTC TGA AAC CTC GAC GAC GGT CCA

      4150      4160      4170      4180
*      *      *      *      *      *      *      *
TGG CAT CAA AAG GAA CCG GTG CAG GAG AGT TCC AGG GAC AGT TAC
ACC GTA GGT TTC CTT GGC CAC GTC CTC TCA AGG TCC CTG TCA ATG

      4190      4200      4210      4220      4230
*      *      *      *      *      *      *      *
TGG GGA CAA TTG CAT TCA TGG CGC CTG AGG TCC TAA GAG GTC AGC
ACC CCT GTT AAC GTA AGT ACC GCG GAC TCC AGG ATT CTC CAG TCG

      4240      4250      4260      4270
*      *      *      *      *      *      *      *
AGT ATG GTA GGA GCT GTG ATG TAT GGA GTG TTG GCT GCG CCA TTA
TCA TAC CAT CCT CGA CAC TAC ATA CCT CAC AAC CGA CGC GGT AAT

      4280      4290      4300      4310      4320
*      *      *      *      *      *      *      *
TAG AAA TGG CTT GTG CAA AAC CAC CTT GGA ATG CAG AAA AAC ACT
ATC TTT ACC GAA CAC GTT TTG GTG GAA CCT TAC GTC TTT TTG TGA

      4330      4340      4350      4360
*      *      *      *      *      *      *      *
CCA ATC ATC TCG CCT TGA TAT TTA AGA TTG CTA GCG CAA CTA CTG
GGT TAG TAG AGC GGA ACT ATA AAT TCT AAC GAT CGC GTT GAT GAC

      4370      4380      4390      4400      4410
*      *      *      *      *      *      *      *
CAC CGT CCA TCC CGT CAC ACC TGT CCC CGG GTC TGC GCG ACG TGG
GTG GCA GGT AGG GCA GTG TGG ACA GGG GCC CAG ACG CGC TGC ACC

      4420      4430      4440      4450
*      *      *      *      *      *      *      *
CCG TGC GCT GCT TAG AAC TTC AGC CTC AGG ACC GGC CTC CGT CCA
GGC ACG CGA CGA ATC TTG AAG TCG GAG TCC TGG CCG GAG GCA GGT

      4460      4470      4480      4490      4500
*      *      *      *      *      *      *      *
GAG AGC TGC TGA AAC ATC CGG TCT TCC GTA CCA CGT GGT AGT TAA
CTC TCG ACG ACT TTG TAG GCC AGA AGG CAT GGT GCA CCA TCA ATT

      4510      4520      4530      4540
*      *      *      *      *      *      *      *
TTG TTC AGA TCA GCT CTA ATG GAG ACA GGA TAT GCA ACC GGG AGA
AAC AAG TCT AGT CGA GAT TAC CTC TGT CCT ATA CGT TGG CCC TCT

      4550      4560      4570      4580      4590
*      *      *      *      *      *      *      *
GAG AAA AGA GAA CTT GTG GGC GAC CAT GCG GCT AAC CGC AGC CCT
CTC TTT TCT CTT GAA CAC CCG CTG GTA CGG CGA TTG GCG TCG GGA

      4600      4610      4620      4630
*      *      *      *      *      *      *      *
CAC GCC ACT GAA CAG CCA GAA ACG GGG CCA GCG GGG AAC CGT ACC

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Figure 11

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

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GTG CGG TGA CTT GTC GGT CTT TGC CCC GGT CGC CCC TTG GCA TGG
    4640          4650          4660          4670          4680
      *            *            *            *            *
TAA GCA TGT GAT TGA CAA ATC ATG ACC TGT ACC TAA GCT CGA TAT
ATT CGT ACA CTA ACT GTT TAG TAC TGG ACA TGG ATT CGA GCT ATA

      4690          4700          4710          4720
        *            *            *            *            *
GCA GAC ATC TAC AGC TCG TGC AGG AAC TGC ACA CCG TGC CTT TCA
CGT CTG TAG ATG TCG AGC ACG TCC TTG ACG TGT GGC ACG GAA AGT

    4730          4740          4750          4760          4770
      *            *            *            *            *
CAG GAC TGG CTC TGG GGG ACC AGG AAG GCG ATG GAG TTT GCA TGA
GTC CTG ACC GAG ACC CCC TGG TCC TTC CGC TAC CTC AAA CGT ACT

      4780          4790          4800          4810
        *            *            *            *            *
CTA AAG AAC AGA AGC ATA AAT TTA TTT TTG GAG CAC TTT TTC AGC
GAT TTC TTG TCT TCG TAT TTA AAT AAA AAC CTC GTG AAA AAG TCG

    4820          4830          4840          4850          4860
      *            *            *            *            *
TAA TCA GTA TTA CCA TGT ACA TCA ACA TGC CCG CCA CAT TTC AAA
ATT AGT CAT AAT GGT ACA TGT AGT TGT ACG GGC GGT GTA AAG TTT

      4870          4880          4890          4900
        *            *            *            *            *
CTC AGA CTG TCC CAG ATG TCA AGA TCC ACT GTG TTT GAG TTT GTT
GAG TCT GAC AGG GTC TAC AGT TCT AGG TGA CAC AAA CTC AAA CAA

    4910          4920          4930          4940          4950
      *            *            *            *            *
TGC AGT TCC CTC AGC TTG CTG GTA ATT GTG GTG TTT TGT TTT CGA
ACG TCA AGG GAG TCG AAC GAC CAT TAA CAC CAC AAA ACA AAA GCT

      4960          4970          4980          4990
        *            *            *            *            *
TGC AAA TGT GAT GTA ATA TTC TTA TTT TCT TTG GAT CAA AGC TGG
ACG TTT ACA CTA CAT TAT AAG AAT AAA AGA AAC CTA GTT TCG ACC

    5000          5010          5020          5030          5040
      *            *            *            *            *
ACT GAA AAT TGT ACT GTG TAA TTA TTT TTG TGT TTT TAA TGT TAT
TGA CTT TTA ACA TGA CAC ATT AAT AAA AAC ACA AAA ATT ACA ATA

      5050          5060          5070          5080
        *            *            *            *            *
TTG GTA CTC GAA TTG TAA ATA ACG TCT ACT GCT GTT TAT TCC AGT
AAC CAT GAG CTT AAC ATT TAT TGC AGA TGA CGA CAA ATA AGG TCA

    5090          5100          5110          5120          5130
      *            *            *            *            *
TTC TAC TAC CTC AGG TGT CCT ATA GAT TTT TCT TCT ACC AAA GTT
AAG ATG ATG GAG TCC ACA GGA TAT CTA AAA AGA AGA TGG TTT CAA

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Figure 11J

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS

# Mouse MEKK1 cDNA

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      5140      5150      5160      5170
      *        *        *        *
CAC TCT CAG AAT GAA ATT CTA CGT GCT GTG TGA CTA TGA CTC CTA
GTG AGA GTC TTA CTT TAA GAT GCA CGA CAC ACT GAT ACT GAG GAT

      5180      5190      5200      5210      5220
      *        *        *        *        *
AGA CTT CCA GGG CTT AAG GGC TAA CTC CTA TTA GCA CCT TAC TAT
TCT GAA GGT CCC GAA TTC CCG ATT GAG GAT AAT CGT GGA ATG ATA

      5230      5240      5250
      *        *        *
GTA AGC AAA TGC TAC AAA AAA AAA AAA AAA AAA
CAT TCG TTT ACG ATG TTT TTT TTT TTT TTT TTT

```

Figure 11 K

App No.: Not Yet Assigned

Docket No.: CPI-042CN2

Inventor: Gary L. Johnson

Title: METHOD AND PRODUCT FOR REGULATING  
APOPTOSIS